

Build a Calf Worksheet

Group members:

Polled or Horned?

Use the following Punnett square to determine if the calves will have horns or will be polled (no horns). Remember that polled (P) is the dominant trait to horned (p).

Polled (P) or Horned (h)?		Bull's Alleles	
		P	p
Cow's Alleles	p	Pp	pp
	p	Pp	pp

1. What is the bull's genotype? Pp Is the bull horned or polled?
Polled
2. Are the cow's alleles homozygous or heterozygous? homozygous
3. What ratio or percentage of the calves could be polled? 50% Horned? 50%

Black or Red?

Use the following Punnett square to determine if the calves will have a black or red coat. Black is dominant (B) to red (b). Hypothesize the results before completing the square.

Black (B) or Red(b)?		Bull's Alleles		Do you think most of the calves will be black or red? Why? <i>Black because black is a dominant trait and both parents are black.</i>
		B	b	
Cow's Alleles	B	BB	Bb	
	b	Bb	bb	

1. What color is the bull? Black What color is the cow? Black
2. What ratio or percentage of the calves could be red? 25%

Now, let's cross the same bull (Bb) with a red cow (bb).

		Bull's Alleles		What is the phenotype for each genotype possibility? 1. <u>Black</u> 2. <u>Red</u> 3. <u>Black</u> 4. <u>Red</u>
		B	b	
Cow's Alleles	b	Bb	bb	
	b	Bb	bb	

Build a Calf

You have a mix of the following cattle breeds on your farm: Black Angus (solid black), Hereford (red coat with a white face and belly), and Charolais (cream colored, which is the result of a red coat – bb - with homozygous dilution DD). What are the possible coat colors that may result when you cross different breeds of cows and bulls?

Use the dice to determine each of the alleles in your calf's genotype. Since a calf has two parents, you will **roll twice** for each trait. Use the table to the right to assign an allele for each number rolled. Once you have your genotype, determine the phenotype. Remember that CAPITAL letters are the dominant alleles. Use crayons to create a visual representation of your calf.

Trait	Bull Allele	Cow Allele	Phenotype
	Genotype		
Horned or Polled?	P	p	Polled
Coat Color	b	b	Red
White Face & Belly	f	F	White face

Circle the **HOMOZYGOUS** genotypes above.

Horned or Polled

Odd # – p (horned)

Even # – P (polled)

Coat color

1/2/3 – B (black)

4/5/6 – b (red)

White Face & Belly

1 – F (white face & belly)

2,3,4 – f (no white)

5 – F (white face & belly)

6 – f (no white)

